

**CLAIMS PENDING AFTER AMENDMENT**

1           32.    A compound having a structure selected from:

2                    $X-R-A-Q-(Y)_n$ ,  $R-X-A-(Y)_n-Q$ ,  $R-X-A-Q-(Y)_n$ , and

3                    $X-R-A-(Y)_n-Q$

4                   wherein,

5                   A is a nucleic acid chain comprising nucleic acid monomers selected from the group  
6 consisting of natural nucleic acids, modified nucleic acids and combinations thereof;

7                   R is a molecular energy transfer donor;

8                   Q is a molecular energy acceptor; and

9                   X and Y are the same or different and are non-nucleic acid stabilizing moieties that  
10 interact to bring R and Q into operative proximity, thereby enabling transfer of energy from R to Q;  
11 and

12                   n is 0 or 1.

1           33.    The compound according to claim 32, wherein said molecular energy donor is  
2 a fluorophore.

1           34.    The compound according to claim 32, wherein said molecular energy acceptor  
2 is a fluorescence quencher.

1           35.    The compound according to claim 32, wherein X and Y are both hydrophobic  
2 moieties.

1           36.    The compound according to claim 35, wherein X and Y are members  
2 independently selected from the group consisting of saturated hydrocarbons, unsaturated  
3 hydrocarbons, steroids, fatty acids, fatty alcohols and hydrophobic peptides.

1           37.    The compound according to claim 32, wherein natural nucleic acids are  
2 members selected from the group consisting of deoxyribonucleotides, ribonucleotides and  
3 combinations thereof.

1                   38.     The compound according to claim 37, wherein said modified nucleic acids  
2 are peptide nucleic acids.

1                   39.     The compound according to claim 32, wherein said nucleic acid monomers  
2 are joined by linkages that are members independently selected from the group consisting  
3 phosphodiesters and modified phosphodiesters.

1                   20.     The compound according to claim 39, wherein said modified phosphodiesters  
2 are members selected from the group consisting of phosphorothioates and phosphoramidates.

1                   41.     The compound according to claim 32, wherein said nucleic acid sequence  
2 further comprises a hybridization enhancing moiety.

1                   42.     The compound according to claim 41, wherein said hybridization enhancing  
2 moiety is a member selected from the group consisting of intercalating agents, minor groove binders  
3 and modified exocyclic bases.

1                   43.     The compound according to claim 32, wherein X and Y are independently  
2 attached to members selected from the group consisting of a natural base of said nucleic acid chain, a  
3 modified base of said nucleic acid chain, a 3'-hydroxyl group of said nucleic acid chain, a 5'-  
4 hydroxyl group of said nucleic acid chain, a 2'-hydroxyl group of said nucleic acid chain, and a  
5 linkage joining nucleic acid groups in said nucleic acid chain.

1                   44.     The compound according to claim 32, wherein said compound is immobilized  
2 on a solid surface.

1                   45.     A method for amplifying a polynucleotide, wherein a compound according to  
2 claim 32 is a primer in said method, said method comprising:

- 3                   (a) hybridizing said primer to said polynucleotide; and  
4                   (b) amplifying said polynucleotide.

1                   46.     The method according to claim 45, wherein said amplifying is a member  
2 selected from the group consisting of polymerase chain reaction (PCR), nucleic acid sequence based  
3 amplification (NASBA), strand displacement amplification (SDA) and combinations thereof.

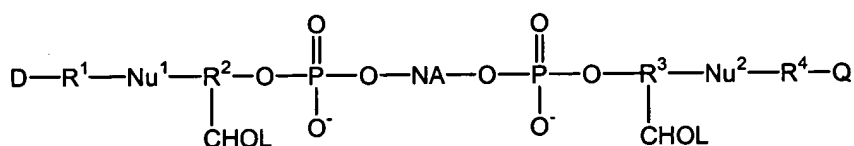
1           47.    A method for detecting or quantitating a nucleic acid, wherein the compound  
2 according to claim 32 is used as a probe, said method comprising:

- 3                   (a) hybridizing said compound to said nucleic acid; and  
4                   (b) detecting a change in fluorescence of said compound, thereby detecting or  
5 quantitating said nucleic acid .

1           48.    The method according to claim 47, wherein said method comprises a member  
2 selected from the group consisting of 5'-nuclease assay, rolling circle amplification and  
3 combinations thereof.

1           49.    A kit for quantitating nucleic acid, said kit comprising a compound according  
2 to claim 32.

1           50.    A compound having the formula:  
2



3  
4 wherein,

5           CHOL is a cholesterol derivative;

6           R<sup>1</sup>, R<sup>2</sup>, R<sup>3</sup> and R<sup>4</sup> are linker moieties independently selected from the group  
7 consisting of substituted or unsubstituted alkyl and substituted or unsubstituted heteroalkyl;

8           Nu<sup>1</sup> and Nu<sup>2</sup> are members independently selected from the group consisting of  
9 nucleotide residues and nucleoside residues;

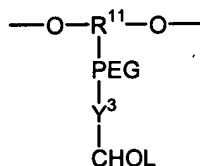
10          NA is a nucleic acid sequence;

11          D is a donor of light energy; and

12          Q is a quencher of light energy,

13          wherein each CHOL interacts with the other CHOL to bring D and Q into operative  
14 proximity, thereby enabling transfer of energy from D to Q.

1           51.    The compound according to claim 50, wherein  $R^1$  and  $R^2$  are independently  
2 selected and have structures according to the formula:  
3



4  
5 wherein,

6            $R^{11}$  is a member selected from the group consisting of substituted or unsubstituted  
7 alkyl and substituted or unsubstituted heteroalkyl;

8           PEG is polyethylene glycol;

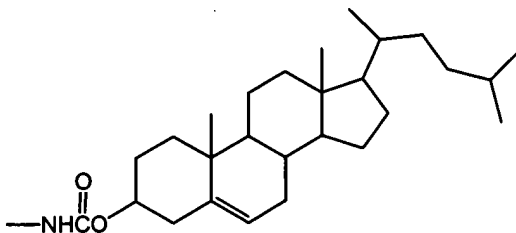
9            $Y^3$  is an organic functional group adjoining said PEG to said CHOL.

1           52.    The compound according to claim 51, wherein said PEG has from about 2 to  
2 about 20 ethylene glycol subunits.

1           53.    The compound according to claim 51 in which  $R^{11}$  is substituted or  
2 unsubstituted alkyl.

1           54.    The compound according to claim 53, wherein  $R^{11}$  is  $C_1$ - $C_6$  substituted or  
2 unsubstituted alkyl.

1           55.    The compound according to claim 51, wherein  $Y^3$ -CHOL has the structure:

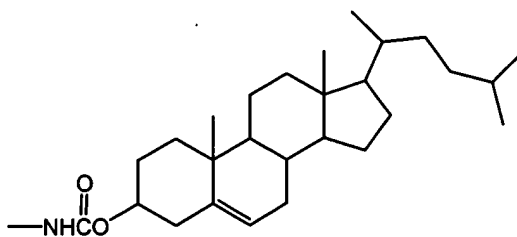


1           56.    The compound according to claim 50, wherein  $Nu^1$  and  $Nu^2$  are nucleotides  
2 having an exocyclic amine group to which  $-R^1$ -D and  $-R^4$ Q are attached, respectively.

$$\text{D-R}^5\text{HN}-\text{Nu}^1-\text{O}-\text{P}(\text{O})_2\text{O}-\text{CH}_2-\text{CH}(\text{CHOL}-\text{Y}^1)-\text{O}-\text{P}(\text{O})_2\text{O}-\text{NA}-\text{O}-\text{P}(\text{O})_2\text{O}-\text{CH}_2-\text{CH}(\text{Y}^2-\text{CHOL})-\text{O}-\text{P}(\text{O})_2\text{O}-\text{Nu}^2-\text{NH}-\text{R}^6-\text{Q}$$

60. The compound according to claim 59, wherein said PEG has from about 2 to about 20 ethylene glycol subunits.

1                    61.    The compound according to claim 57, wherein Y<sup>1</sup>-CHOL and Y<sup>2</sup>-CHOL have  
2 the structure:



3  
1                    62.    The compound according to claim 57, wherein Nu<sup>1</sup> and Nu<sup>2</sup> are nucleotides  
2 having an exocyclic amine group to which -R<sup>5</sup>-D and -R<sup>6</sup>Q are attached, respectively.